Remarks

The Office Action mailed November 7, 2008 has been carefully reviewed and the following remarks have been made in consequence thereof.

Claims 1-3, 5, 6, 15-17, 19, 20, 29-31, 33, and 34 are pending in this application. Claims 1-6, 15-20, and 29-34 stand rejected. Claims 4, 18, and 32 have been cancelled.

The rejection of Claims 1-6 and 29-34 under under 35 U.S.C. § 101 as being directed to non-statutory subject matter is respectfully traversed.

The Office Action asserts at page 3 that Claims 1-6 are directed towards non-statutory subject matter because "[t]he instant claims neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process." As amended, independent Claim 1 recites "scanning an object using a computed tomographic (CT) imaging apparatus to acquire projections of the object . . . determining a set of thresholds utilizing said projections . . . associating selected smoothing kernels with said thresholds . . . utilizing said smoothing kernels and said projections to produce three-dimensional smoothed projections in accordance with said thresholds . . . filtering and backprojecting the three-dimensional smoothed projections to generate an image of the object in the computed tomographic imaging system." Applicants respectfully submit that computed tomographic imaging system, as recited, is a statutory category. Accordingly, for at least the reasons set forth above, Applicants respectfully request that the Section 101 rejection of Claims 1 be withdrawn.

Claim 4 has been cancelled.

Claims 2, 3, 5, and 6 depend, directly or indirectly, from independent Claim 1. When the recitations of Claims 2, 3, 5, and 6 are considered in combination with the recitations of Claim 1, Applicant submits that dependent Claims 2, 3, 5, and 6 likewise satisfy the requirements of Section 101.

Moreover, the Office Action asserts at page 3 that Claims 29-34 are directed towards non-statutory subject matter because "[t]he specification, at page 7 defines or exemplifies the claimed computer readable medium as encompassing statutory media such as "CD-ROM" or

"DVD" etc., as well as non-statutory subject matter such as a "signal" i.e. the "internet" or "a network". Accordingly, Applicants have amended to specification to remove the recitation "[o]r another digital source such as a network or the Internet...." Accordingly, Applicants respectfully submit that the specification as amended renders Claim 29 to be statutory. Accordingly, for at least the reasons set forth above, Applicants respectfully request that the Section 101 rejection of Claims 29 be withdrawn.

Claim 32 has been cancelled.

Claims 30, 31, 33, and 34 depend, directly or indirectly, from independent Claim 29. When the recitations of Claims 30, 31, 33, and 34 are considered in combination with the recitations of Claim 29, Applicant submits that dependent Claims 30, 31, 33, and 34 likewise satisfy the requirements of Section 101.

For at least the reasons set forth above, Applicant respectfully requests that the Section 101 rejection of Claims 1-6 and 29-34 be withdrawn.

The rejection of Claims 15-20 under 35 U.S.C. § 112, first and second paragraphs is respectfully traversed. Claim 15 has been amended to address the issues raised in the Office Action. Claims 16-20 depend from Claim 15. For at least the reasons set forth above, Applicants respectfully request that the rejection of Claims 15-20 under Section 112, first and second paragraphs be withdrawn.

The rejection of Claims 1, 5-6, 15, 19-20, 29, and 33-34 under 35 U.S.C. § 102(b) as being anticipated by Li et al. (U.S. Patent Number 6,449,330) (hereinafter referred to as "Li") is respectfully traversed.

Li describes a method for reducing artifacts in CT images. The method includes using clinical image studies to select a set of thresholds (50), including thresholds T1, T2, and T3 for projection data. A smoothing kernel is used in accordance with the selected set of thresholds to produce a set of smooth projections (56). Notably, Li does not describe nor suggest a method for reconstructing an image of an object in a computed tomographic imaging system, wherein the method includes utilizing smoothing kernels and projections to produce *three-dimensional smoothed projections*, wherein the three-dimensional smoothed projections are used to generate an image of the object in the computed tomographic imaging system. (Emphasis added)

Claim 1 recites a method for reconstructing an image of an object in a computed tomographic imaging system, wherein the method includes "scanning an object using a computed tomographic (CT) imaging apparatus to acquire projections of the object . . . determining a set of thresholds utilizing said projections . . . associating selected smoothing kernels with said thresholds . . . utilizing said smoothing kernels and said projections to produce three-dimensional smoothed projections in accordance with said thresholds . . . filtering and backprojecting the three-dimensional smoothed projections to generate an image of the object in the computed tomographic imaging system."

Li does not describe or suggest a method for reconstructing an image of an object in a computed tomographic imaging system as is recited in Claim 1. Specifically, Li does not describe or suggest a method for reconstructing an image of an object in a computed tomographic imaging system, wherein the method includes utilizing smoothing kernels and projections to produce three-dimensional smoothed projections, wherein the three-dimensional smoothed projections are used to generate an image of the object in the computed tomographic imaging system. Rather, in contrast to the present invention, Li describes a smoothing kernel that is used with a set of thresholds to produce a set of smooth projections. For the reasons set forth above, Claim 1 is submitted to be patentable over Li.

Claims 5 and 6 depend, directly or indirectly, from independent Claim 1. When the recitations of Claims 5 and 6 are considered in combination with the recitations of Claim 1, Applicant submits that dependent Claims 5 and 6 likewise are patentable over Li.

Claim 15 recites a CT imaging apparatus including "a first module configured to scan an object to acquire projections of the object . . . a second module configured to determine a set of thresholds utilizing said projections . . . a third module configured to associate selected smoothing kernels with said thresholds . . . a fourth module configured to utilize said smoothing kernels and said projections to produce three-dimensional smoothed projections in accordance with said thresholds...."

Li does not describe or suggest a CT imaging apparatus as is recited in Claim 15. Specifically, Li does not describe or suggest a CT imaging apparatus that includes a module configured to utilize smoothing kernels and projections to produce three-dimensional smoothed projections, wherein the three-dimensional smoothed projections are used to generate an image of the object in the computed tomographic imaging system. Rather, in

contrast to the present invention, Li describes a smoothing kernel that is used with a set of thresholds to produce a set of smooth projections. For the reasons set forth above, Claim 15 is submitted to be patentable over Li.

Claims 19 and 20 depend, directly or indirectly, from independent Claim 15. When the recitations of Claims 19 and 20 are considered in combination with the recitations of Claim 15, Applicant submits that dependent Claims 19 and 20 likewise are patentable over Li.

Claim 29 recites a computer-readable medium having instructions thereon configured to instruct a computer to "determine a set of thresholds utilizing projections obtained by scanning an object . . . associate selected smoothing kernels with said thresholds . . . utilize smoothing kernels and said projections to produce three-dimensional smoothed projections in accordance with said thresholds . . . filter and backproject the three-dimensional smoothed projections to generate an image of the object."

Li does not describe or suggest a computer-readable medium having instructions thereon configured to instruct a computer as is recited in Claim 29. Specifically, Li does not describe or suggest utilizing smoothing kernels and a plurality of projections to produce three-dimensional smoothed projections. Rather, in contrast to the present invention, Li describes a smoothing kernel that is utilized in accordance with a set of thresholds to produce a set of smooth projections. For the reasons set forth above, Claim 29 is submitted to be patentable over Li.

Claims 33 and 34 depend, directly or indirectly, from independent Claim 29. When the recitations of Claims 33 and 34 are considered in combination with the recitations of Claim 29, Applicant submits that dependent Claims 33 and 34 likewise are patentable over Li.

Accordingly, for at least the reasons set forth above, Applicants respectfully request that the Section 102 rejection of Claims 1, 5-6, 15, 19-20 and 29, 33-34 be withdrawn.

The rejection of Claims 2-3, 16-17, and 30-31 under 35 U.S.C. § 103(a) as being unpatentable over Li et al. is respectfully traversed.

Li is described above.

Claims 2-3 depend from Claim 1 which recites a method for reconstructing an image of an object in a computed tomographic imaging system, wherein the method includes "scanning an object using a computed tomographic (CT) imaging apparatus to acquire projections of the object . . . determining a set of thresholds utilizing said projections . . . associating selected smoothing kernels with said thresholds . . . utilizing said smoothing kernels and said projections to produce three-dimensional smoothed projections in accordance with said thresholds . . . filtering and backprojecting the three-dimensional smoothed projections to generate an image of the object in the computed tomographic imaging system."

Li does not describe or suggest a method for reconstructing an image of an object in a computed tomographic imaging system as is recited in Claim 1. Specifically, Li does not describe or suggest a method for reconstructing an image of an object in a computed tomographic imaging system, wherein the method includes utilizing smoothing kernels and projections to produce three-dimensional smoothed projections, wherein the three-dimensional smoothed projections are used to generate an image of the object in the computed tomographic imaging system. Rather, in contrast to the present invention, Li describes a smoothing kernel that is used with a set of thresholds to produce a set of smooth projections. For the reasons set forth above, Claim 1 is submitted to be patentable over Li.

Claims 2-3 depend, directly or indirectly, from independent Claim 1. When the recitations of Claims 2-3 are considered in combination with the recitations of Claim 1, Applicant submits that dependent Claims 2-3 likewise are patentable over Li.

Claims 16-17 depend from Claim 15 which recites a CT imaging apparatus that includes "a first module configured to scan an object to acquire projections of the object . . . a second module configured to determine a set of thresholds utilizing said projections . . . a third module configured to associate selected smoothing kernels with said thresholds . . . a fourth module configured to utilize said smoothing kernels and said projections to produce three-dimensional smoothed projections in accordance with said thresholds...."

Li does not describe or suggest a CT imaging apparatus as is recited in Claim 15. Specifically, Li does not describe or suggest a CT imaging apparatus that includes a module configured to utilize smoothing kernels and projections to produce three-dimensional smoothed projections, wherein the three-dimensional smoothed projections are used to

generate an image of the object in the computed tomographic imaging system. Rather, in contrast to the present invention, Li describes a smoothing kernel that is used with a set of thresholds to produce a set of smooth projections. For the reasons set forth above, Claim 15 is submitted to be patentable over Li.

Claims 16-17 depend, directly or indirectly, from independent Claim 15. When the recitations of Claims 16-17 are considered in combination with the recitations of Claim 15, Applicant submits that dependent Claims 16-17 likewise are patentable over Li.

Claims 30-31 depend from Claim 29 which recites a computer-readable medium having instructions thereon configured to instruct a computer to "determine a set of thresholds utilizing projections obtained by scanning an object . . . associate selected smoothing kernels with said thresholds . . . utilize smoothing kernels and said projections to produce three-dimensional smoothed projections in accordance with said thresholds . . . filter and backproject the three-dimensional smoothed projections to generate an image of the object."

Li does not describe or suggest a computer-readable medium having instructions thereon configured to instruct a computer as is recited in Claim 29. Specifically, Li does not describe or suggest utilizing smoothing kernels and a plurality of projections to produce three-dimensional smoothed projections. Rather, in contrast to the present invention, Li describes a smoothing kernel that is utilized in accordance with a set of thresholds to produce a set of smooth projections. For the reasons set forth above, Claim 29 is submitted to be patentable over Li.

Claims 30-31 depend, directly or indirectly, from independent Claim 29. When the recitations of Claims 30-31 are considered in combination with the recitations of Claim 29, Applicant submits that dependent Claims 30-31 likewise are patentable over Li.

In addition, Applicants respectfully submit that the Section 103 rejection of the presently pending claims is not a proper rejection. As is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or motivation supporting the combination. Li does not describe nor suggest the claimed invention. Rather, only the conclusory statement that "[t]herefore it would have been obvious to one of ordinary skill in the art to try a number of thresholds not equal to 3 but greater then 1." suggests obviousness over Li.

The United States Supreme Court has recently held that obviousness rejections must be supported with "articulated reasoning with some rational underpinning to support the conclusion of obviousness." *See* KSR International Co. v. Teleflex, Inc., slip Opinion at page 14. The present rejection does not appear to meet this standard as it reflects no articulate reasoning why the claims are believed to be obvious, but rather is merely stated in the form of a conclusion of obviousness. It is not believed that adequate reasons why the presently claimed invention is believed to be obvious have been provided on the present record.

Moreover, it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the cited art using reconstruction to render the present invention obvious. The United States Supreme Court has recently expressed concern regarding distortion caused by hindsight bias in an obviousness analysis, and notes that factfinders should be cautious of arguments reliant upon ex post reasoning. *See* KSR International Co. v. Teleflex, Inc., slip Opinion at page 17. Further, it is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. The present Section 103 rejection is based on a combination of teachings selected in an attempt to arrive at the claimed invention.

Since there is no teaching or suggestion in the cited art for the combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicants request that the Section 103 rejection be withdrawn.

Accordingly, for at least the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 2-3, 16-17, and 30-31 be withdrawn.
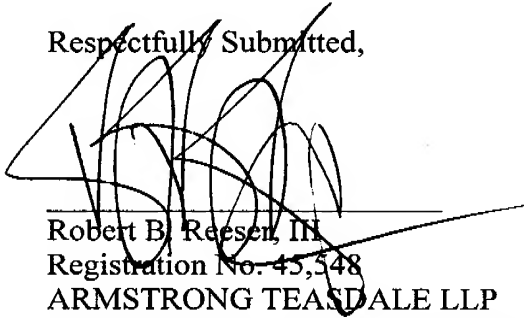
The rejection of Claims 4, 18, and 32 under 35 U.S.C. § 103(a) as being unpatentable over Li et al. in view of Kachelriess et al. (DE 198,53,141) is respectfully traversed.

Claims 4, 18, and 32 have been cancelled.

Accordingly, for at least the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 4, 18, and 32 be withdrawn.

In view of the foregoing amendment and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,

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